Aug. 11, 1936. E. J. KRAUSE 2,050,575

SOUND REPRODUCING CABINET

Filed Dec. 24, 1934

Fig. 1.

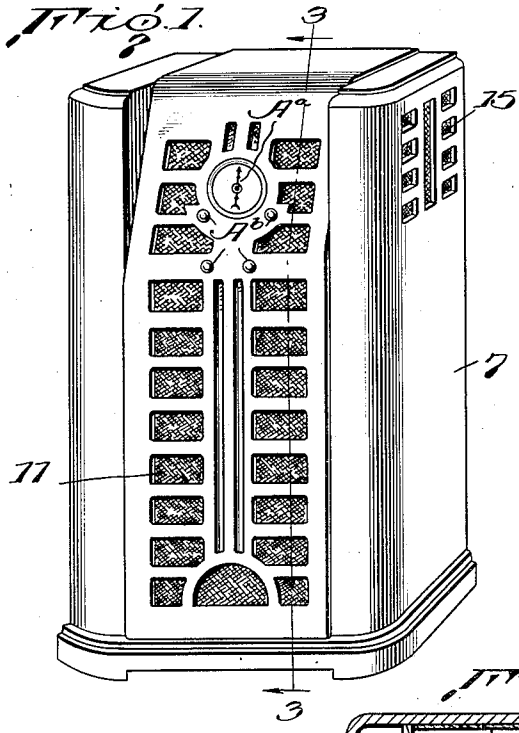


Fig. 3.

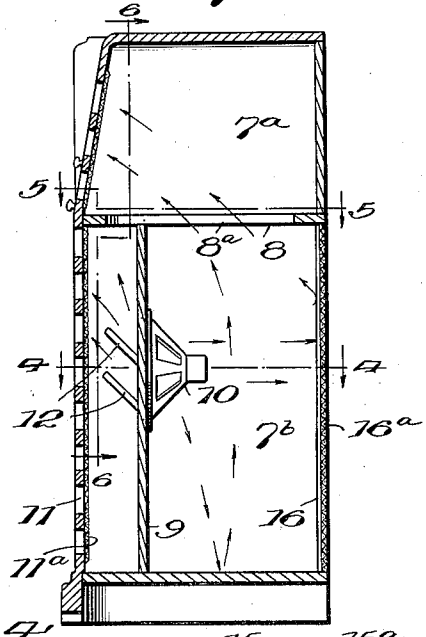


Fig. 4.

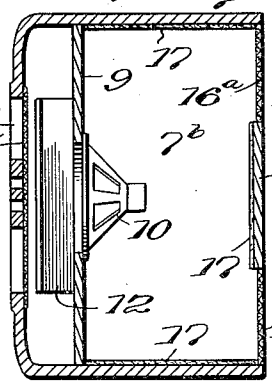
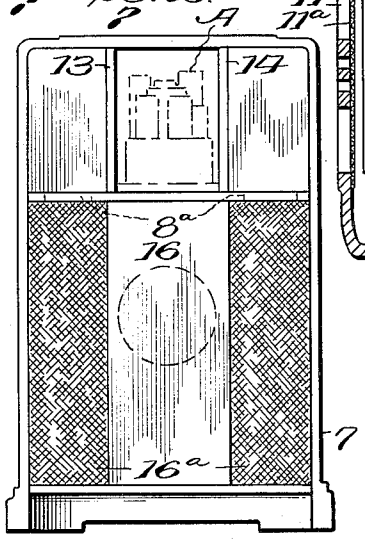


Fig. 2.



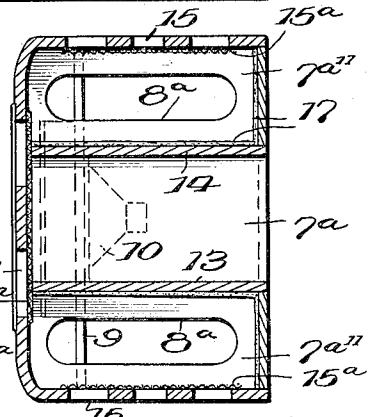


Fig. 5.

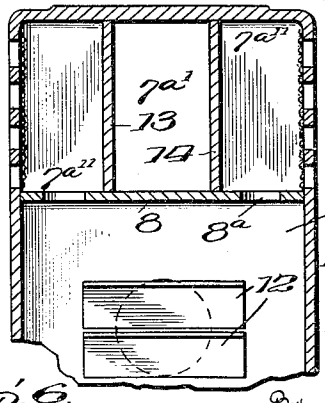


Fig. 6.

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2,050,575

SOUND REPRODUCING CABINET

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Application December 24, 1934, Serial No. 759,109

14 Claims. (Cl. 181—31)

This invention relates to sound reproducing cabinets and is particularly useful in radio receiving sets, electric phonographs, and the like.

An object of my invention is to provide a cabinet for housing a sound reproducer and the energizing apparatus therefor, the cabinet being arranged and constructed to efficiently utilize the sound radiated both from the front and from the rear of the sound reproducer.

A further object of my invention is to devise a sound reproducing cabinet which will avoid concentration of the sound in a given direction and will distribute the sound substantially evenly in several directions.

A further object of my invention is to utilize space in sound reproducing cabinets which otherwise serves no useful purpose.

Still another object of my invention is to devise a sound reproducing cabinet of improved acoustic quality.

One embodiment of my invention is illustrated in the accompanying drawing in which:

Figure 1 is a perspective view showing the front and one side of a cabinet embodying my invention;

Figure 2 is a rear view of Figure 1;

Figure 3 is a sectional view of Figure 1 taken along line 3—3;

Figure 4 is a sectional view of Figure 3 taken along line 4—4;

Figure 5 is a sectional view of Figure 3 taken along line 5—5, and

Figure 6 is a sectional view of Figure 3 taken along line 6—6.

Referring to the drawing, the cabinet 7 is provided with a horizontal partition 8 dividing the cabinet into an upper section 7a and a lower section 7b. A baffle board 9 is mounted in the lower section 7b, spaced from the front wall of the cabinet, and supports the sound reproducer 10, which is shown as a conventional cone-type loud-speaker which emits sound waves both to the front and to the rear. The front wall of the cabinet is provided with a grill 11 through which the sound waves from the loud speaker 10 and the baffle board 9 are emitted to the front of the cabinet. Grill 11 is covered with the usual fabric 11a. One or more deflecting shutters 12 are mounted in front of the loud-speaker opening in the baffle board 9 and serve to direct the sound waves emitted from the loud-speaker 10 upwardly through the grill 11. These shutters may be mounted so the angle of deflection may be adjusted, and while the shutters have been shown as extending only partly across the cabinet, it is obvious that they may extend all the way across, if desired.

The upper section 7a of the cabinet is divided into three compartments by vertical partitions 13 and 14. The center compartment 7a' contains the energizing apparatus A (Fig. 2) for the loud speaker 10, which may be a radio receiving set, an electric phonograph, or any other suitable apparatus. Since the energizing apparatus for the loud speaker forms no part of the present invention, and is well known in the art, the details thereof will not be described. The two outside compartments 7a'' constitute tone chambers and communicate with the lower section of the cabinet 7b through openings 8a formed in the horizontal partition 8. The openings 8a may or may not extend beyond the baffle board 9, as desired. Suitable grills 15 are formed in the side walls of the cabinet and provide openings through which sound waves are emitted from the tone chambers 7a''. These grills are preferably covered by the usual fabric 15a.

The front wall of the cabinet extending above the horizontal partition 8 is also provided with a grill work, the opening of which may extend laterally beyond the vertical partitions 13 and 14 as shown in Figure 5 to provide sound outlets for tone chambers 7a'' in front of the cabinet. As shown in Figure 1 of the drawing, these sound openings may entirely surround the tuning indicator Aa and controls Ab for the radio apparatus A arranged in compartment 7a''. While the front wall of the cabinet above the partition 8 has been shown inclined, it is obvious this front wall may be vertical or arranged in any other desired manner. Also, the center compartment 7a' need not extend all the way forward to the front wall of the cabinet, but the partitions 13 and 14 may terminate short of the front wall so that the entire grill opening at the top of the cabinet will emit sound waves.

Forming a part of the back wall of the lower section 7b is a vertical sounding board 16 arranged directly behind the loud speaker 10, the remainder of the back wall being formed of suitable fabric 16a as shown. If desired, the reflecting board 16 may extend entirely across the lower section of the cabinet and form the entire back wall of this section. Where the board 16 extends entirely across the lower section the acoustic characteristic of the section may be modified in any desired manner by forming holes in the back wall as is well understood by those skilled in the art.

From the foregoing description, it will be un-

derstood that in the operation of my invention sound waves emitted to the front of the sound reproducer 10 are deflected upward by shutters 12 and pass out to the front of the cabinet through the grill 11. Sound waves are also emitted to the rear of the loud speaker 10 and the baffle board 9, certain of the waves being deflected upwardly by the deflecting board 16 and pass into the tone chambers 7a'' through the openings 8a formed in the partition 8, and from the tone chambers the sound waves are emitted through the grills 15 formed in the side walls of the cabinet, and also through the grills formed in the upper part of the front wall of the cabinet. The bottom wall of the lower cabinet section also serves to deflect sound waves upwardly into the tone chambers, as shown by the arrows in Figure 3. It will thus be seen that my improved cabinet construction provides for the emission of sound waves on three sides of the cabinet, and also utilizes the sound waves emitted to the rear of the sound reproducing instrument and to the rear of the baffle board on which it is mounted. Such an arrangement avoids concentration of the sound in one direction and gives a substantially uniform radiation of sound throughout the room in which the cabinet is located. It will be understood that by varying the size and arrangement of the tone chambers 7a'', the acoustic characteristic of the cabinet may be controlled and modified in a manner well understood by those skilled in the art. My improved cabinet construction also utilizes the sound waves emitted to the rear of the loud speaker, and renders useful the space behind the loud-speaker and on each side of the energizing apparatus, which space has heretofore served no useful purpose.

For the purpose of suppressing sharp resonance effects of the walls of the cabinet, I prefer to cover all walls of the lower compartment 7b and the tone chamber 7a'' with a suitable fabric 17, such as cotton felt. This covering has been illustrated only in Figures 4 and 5 for the sake of simplicity in the drawing. This fabric softens the tone and materially improves the quality of the sound reproductions.

It will be understood that my improved sound reproducing cabinet may be used in any apparatus involving the reproduction of sound, such as radio receiving sets, electric phonographs, portable talking-movie apparatus, and the like.

It is obvious that my invention may be modified in many ways, and all such modifications as fall within the terms of the appended claims are considered as falling within the scope of my invention.

What I claim is:

1. In combination, a cabinet having a grill formed in one wall thereof, a partition dividing said cabinet into an upper and a lower section, a baffle board mounted in said lower section spaced from said grill, a sound reproducer mounted upon said baffle board and adapted to emit sound waves from one side thereof through a portion of said grill, the upper compartment of said cabinet forming a tone chamber adjacent the upper portion of said grill and being provided with a passage communicating with the space to the rear of said sound reproducer.

2. In combination, a cabinet provided with a partition forming upper and lower sections, a grill formed in the front wall of said cabinet opposite said lower section, a sound reproducer mounted in said lower section and arranged to emit sound waves through said grill, the upper section of said cabinet comprising a tone chamber communicating with the rear of said sound reproducer, and being provided with a grill formed in a side wall of said cabinet.

3. In combination, a cabinet provided with a partition forming upper and lower sections, a grill formed in the front wall of said cabinet opposite said lower section, a baffle board mounted in said lower section spaced from said grill, a sound reproducer mounted upon said baffle board and adapted to emit sound waves through said grill, the upper section of said cabinet comprising a tone chamber and being provided with a passage communicating with the space to the rear of said baffle board in the lower section, and grills formed in the side walls of said cabinet opposite said upper section and communicating with said tone chamber.

4. In combination, a cabinet provided with a partition forming upper and lower sections, a grill formed in the front wall of said cabinet opposite said lower section, a sound reproducer mounted in said lower section and arranged to emit sound waves through said grill, partitions dividing said upper section into two outer compartments and a center compartment, said outer compartments being provided with passages communicating with the rear of said sound reproducer, and grills formed in the side walls of said cabinet and communicating with said outer compartments.

5. In combination, a cabinet provided with a partition forming upper and lower sections, a grill formed in the front wall of said cabinet opposite said lower section, a baffle board mounted in said lower section spaced from said grill, a sound reproducer mounted upon said baffle board and adapted to emit sound waves through said grill, partitions dividing said upper section into two outer compartments and a center compartment, said outer compartments being provided with passages communicating with the space in the lower section to the rear of said baffle board, and grills formed in the side walls of said cabinet and communicating with said outer compartments.

6. In combination, a cabinet having a grill formed in one wall thereof, a sound reproducer arranged adjacent a portion of said grill, energizing apparatus for said reproducer arranged opposite another portion of said grill, control means for said energizing apparatus extending through said grill, and means forming sound passages for conducting sound waves from the rear of said sound reproducer and emitting the same through the portion of the grill opposite said energizing apparatus.

7. In combination, a cabinet having a grill formed in one side thereof, a partition dividing said cabinet into upper and lower sections, a sound reproducer mounted in said lower section and arranged to emit sound waves through the lower portion of said grill, energizing apparatus for said reproducer arranged in said upper section, and means forming a sound passage connecting said upper section with the lower section whereby sound waves emitted from the rear of said sound reproducer are transmitted through the upper portion of said grill adjacent said upper section.

8. In combination, a cabinet provided with a partition forming upper and lower sections, a grill formed in the front wall of said cabinet opposite said lower section, a sound reproducer mounted in said lower section and arranged to

emit sound waves through said grill, partitions dividing said upper sections into two outer compartments and a center compartment, energizing apparatus for said sound reproducer arranged in said center compartment, a grill formed in the front wall of said cabinet opposite said upper section and forming sound outlets for the two outer compartments, and means forming sound passages connecting the outer compartments with the space in the lower section to the rear of said sound reproducer.

9. In combination, a cabinet provided with a partition forming upper and lower sections, a grill formed in the front wall of said cabinet opposite said lower section, a baffle board mounted in said lower section spaced from said grill, a sound reproducer mounted upon said baffle board and adapted to emit sound waves through said grill, partitions dividing said upper section into two outer compartments and a center compartment, energizing apparatus for said sound reproducer arranged in said center compartment, said outer compartments being provided with passages communicating with the space in the lower section to the rear of said baffle board, and grills formed in the side walls of said cabinet and communicating with said outer compartments.

10. In combination, a cabinet provided with a partition forming upper and lower sections, a grill formed in the front wall of said cabinet opposite said lower section, a baffle board mounted in said lower section spaced from said grill, a sound reproducer mounted upon said baffle board and adapted to emit sound waves through said grill, partitions dividing said upper section into two outer compartments and a center compartment, energizing apparatus for said sound reproducer arranged in said center compartment, said outer compartments being provided with passages communicating with the space in the lower section to the rear of said baffle board, grills formed in the side walls of said cabinet and communicating with said outer compartments, and grills formed in the front wall of said cabinet opposite said upper section and forming sound outlets for said outer compartments.

11. In combination, a cabinet, a baffle board mounted in said cabinet, a sound reproducer mounted on said baffle board and arranged to emit sound waves to the front and to the rear of said board, and grills formed in the side walls of said cabinet, separate sound chambers formed adjacent said grills and having sound passages communicating with the space to the rear of said baffle board.

12. In combination, a cabinet provided with a partition forming upper and lower sections, grills formed in the front wall of said cabinet opposite said upper and lower sections, a sound reproducer mounted in one of said sections and arranged to emit sound waves through the grills of said section, the other section of said cabinet comprising a tone chamber and being provided with a sound passage communicating with the space to the rear of said sound reproducer.

13. In combination, a cabinet provided with a partition forming upper and lower sections, a baffle board mounted in one of said sections, a sound reproducer mounted on said baffle board and arranged to emit sound waves to the front and to the rear of said board, said other section forming a sound chamber and being provided with a grill formed in one wall of said cabinet, and means forming a sound passage connecting said sound chamber with the space to the rear of said baffle board.

14. In combination, a cabinet having a grill formed in one wall thereof, means forming a sound chamber around said grill, a second grill spaced from said first grill, means forming a second sound chamber around said second grill, a sound reproducer mounted in said first sound chamber and arranged to emit sound waves through the grill thereof, and means forming a sound passage for conducting sound waves from the opposite side of said reproducer to the second sound chamber.

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